MASTER OF SCIENCE
IN
ASTRONAUTICAL ENGINEERING

CONCEPTUAL DESIGN TOOLS FOR THE NPS SPACECRAFT DESIGN CENTER

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The thesis surveys and develops spacecraft design techniques and tools involving the integration of collaborative/concurrent engineering (CE) for spacecraft design, specifically in the areas of spreadsheet and CAD/CAE software, for the NPS Spacecraft Design Center (SDC). The applicability of solid modeling to the spacecraft design process is also explored. A previous class design is modeled using a solid modeling tool and the results compared against the time and effort required for the original. In addition, two CE software tools obtained from commercial and university sources are installed in the SDC, improved, documented if necessary, and evaluated. The capabilities are evaluated with regard to learning curve, CE and their utility to the curriculum. A User's Guide for one of the software tools is written, as no documentation existed for it prior to this thesis. In addition, procedures for spacecraft design utilizing the SDC are developed in order to enhance student design capabilities and further their educational experience.